Programming:

frequency change -> linked list change may be due to the fact that index is inappropriate use

random -> seed random -> srand(2) (Other than 1 within the blanket)

Soft skills:

File: Add a file to save all back up, and only 1 file for latest version

Dummy depot:

From the exact method, I can know how much bikes pick up and drop off at each visit

To do list:

1. Update formulations

Add arguable decision variable

e.g., non usable bike drop off at non-charging station

swap non-usable bike from non-charging docks to charging docks

swap usable bike from charging docks to non-charging docks

1. Deal with the problem that CPLEX needs very large computation time (parallel running)

possible ways to solve:

Solution method: mixed integer non-linear programming

objective function becomes linear:

Now Raviv is a convex non-linear function

demand is a decreasing function and then flat (depend on usable bikes only)

not enough space is a flat then increasing function (depend on usable and non-usable bikes)

BUT the problem is the intersection points of “not enough space” may not be equal or later than the flating position of demand function.

1. Programming test